UNITED STATES PATENT AND TRADEMARK OFFICE

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10/669,931	09/24/2003	Hans F. van Rietschote	5760-13900	4596

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MEYERTONS, HOOD, KIVLIN, KOWERT & GOETZEL, P.C.	PUENTE, EMERSON C	
700 LAVACA, SUITE 800		
AUSTIN, TX 78701		

ART UNIT	PAPER NUMBER
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DATE MAILED: 10/26/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

PTO-90C (Rev. 10/03)

-- *The MAILING DATE of this communication appears on the cover sheet with the correspondence address* --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) ☒ Responsive to communication(s) filed on *11 August 2006*.

2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.

3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) ☒ Claim(s) *1-8,10-25,27-34 and 36-41* is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5) ☐ Claim(s) _____ is/are allowed.

6) ☒ Claim(s) *1-8,10-25,27-34, and 36-41* is/are rejected.

7) ☐ Claim(s) _____ is/are objected to.

8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) ☐ The specification is objected to by the Examiner.

10) ☒ The drawing(s) filed on *24 September 2003* is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a) ☐ All b) ☐ Some * c) ☐ None of:

      1. ☐ Certified copies of the priority documents have been received.

      2. ☐ Certified copies of the priority documents have been received in Application No. _____.

      3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *8/11/06*.

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.

5) ☐ Notice of Informal Patent Application (PTO-152)

6) ☐ Other: _____.

DETAILED ACTION

This action is made **Final**. Claims 1-8,10-25,27-34, and 36-41 have been examined.

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office

action.

Claim Objections

Claim 16 is objected to because of the following informalities:

In regards to claim 16, "attempt to to failover" to "attempt to failover" (see line 8 of

claim).

Appropriate correction is required.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the

basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 16 and 17 are rejected under 35 U.S.C. 102(e) as being anticipated by US Patent

No. 6,629,226 of Harper et al. referred hereinafter "Harper".

In regards to claim 16, Harper discloses:

detecting that an application in a first node is to failover (see figure 5 and column 8 lines 11-16);

provisioning a second node to execute the application responsive to the detecting (see figure 5 and column 8 lines 11-16);

attempting to failing the application over from the first node to the second node (see figure 5 item 502 and column 7 lines 62-67).

detecting a lack of success in the failover, wherein the lack of success is due to a lack of an eligible node (see figure 5 item 502 and column 7 lines 62-67); and

permitting the application to execute on the first node responsive to the lack of the eligible node if the attempt to failover is due to a performance of the application on the first node being less than a threshold performance level. Harper disclose restarting application on a second node if a fail-to node is available (see figure 5 and column 8 lines 11-16), implying that the application is still run on the first node if a second node is not available. Harper further discloses the rejuvenation is done when parameters approach an exhaustion threshold level (see column 8 lines 60-61).

In regards to claim 17, Harper discloses:

wherein, if the attempt to failover is due to a failure in a service group including the application, the method further comprises notifying an administrator. Harper discloses trigger failover when one or more parameters reaches a hazardous region (see column 8 lines 60-61) and it is determined that a fail-to node is unavailable, notifying an operator (see column 8 lines 1-3).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action: ·

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claim 1-4, 8,10-13,19-22,25, 27-34, and 36-41 are rejected under 35 U.S.C. 103(a) as

being unpatentable over US Patent No. 6,360,331 of Vert et al. referred hereinafter "Vert" in

view of US Patent No. 6,922,791 of Mashayekhi et al. referred hereinafter "Mashayekhi".

In regards to claim 1 and 19, Vert discloses:

detecting that an application in a first node is to failover, wherein the first node is

included in a cluster being used to execute the application (see column 2 lines 35-41);

However, Vert discloses wherein a second node that is provisioned to take over the first

node is an active node of the cluster (see column 5 lines 48-52) and as such, fails to explicitly

disclose:

adding a second node to the cluster responsive to the detecting, provisioning the second

node to execute the application responsive to the detecting and failing the application over from

the first node to the second node.

Mashayekhi discloses a commonly known and used failover policy wherein a passive

node provides failover for all actives nodes in the cluster (see column 2 lines 60-67), indicating

adding a second node to the cluster responsive to the detecting, provisioning the second node to

execute the application responsive to the detecting and failing the application over from the first

node to the second node. Examiner interprets "the cluster" described in the claims as a cluster of active node(s). Since a passive node is initially tasked with running no applications, a passive node is not functioning as part of a cluster.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the teachings of Vert with that of Mashayekhi wherein the second node is a passive node that provides failover for all actives nodes in the cluster (see column 2 lines 60-67), indicating adding a second node to the cluster responsive to the detecting, provisioning the second node to execute the application responsive to the detecting and failing the application over from the first node to the second node. A person of ordinary skill in the art would have been motivated to combine the teachings of Vert and Mashayekhi because is Vert is concerned with providing failover (see column 5 lines 48-52) and a passive node that provides failover for all active nodes in the cluster, as per teachings of Mashayekhi, constitutes a commonly known and used failover policy (see column 2 lines 60-67). Furthermore, such a failover policy would be advantageous since it would not provide additional workload to active nodes upon failure.

In regards to claim 2 and 20, Vert discloses:

activating one or more resources used by the application on the second node (see column 2 lines 35-41 and column 7 lines 35-40).

In regards to claim 3 and 21, Vert discloses:

wherein the provisioning comprises installing one or more resources used by the application on the second node (see column 2 lines 35-41 and column 7 lines 35-40).

In regards to claim 4 and 22, Vert discloses:

wherein the second node has multiple boot capability, and wherein the provisioning

comprises rebooting the second node from a partition that comprises one or more resources used

by the application (see column 9 lines 5-11).

In regards to claim 8 and 25, Vert discloses:

adding the first node to the plurality of nodes to be selectable for provisioning (see

column 4 line 63 to column 5 line 5).

In regards to claim 10 and 27, Vert discloses:

wherein the detecting comprises detecting that the performance of the application

executing on the first node is less than a threshold performance level. Vert discloses sending

periodic messages, called heartbeats, to detect the communication path is good and other system

are operational (see column 5 lines 30-35). In the event of a communication failure (no

heartbeat), the system fails over to one or more active systems (see column 5 lines 48-52). The

heartbeats represent the performance of the application. When heartbeats are not received, the

application performance on the first node is less than threshold performance level.

.In regards to claim 11 and 28, Vert discloses:

wherein the performance is less than the threshold performance level for at least a

predetermined time interval. Vert discloses sending periodic messages, called heartbeats, to

detect the communication path is good and other system are operational (see column 5 lines 30-

35). In the event of a communication failure (no heartbeat), the system fails over to one or more

active systems (see column 5 lines 48-52). The heartbeats represent the performance of the

application. When heartbeats are not received within a period of time, the application

performance on the first node is less than threshold performance level for at least a

predetermined time interval.

In regards to claim 12 and 29, Vert discloses:

wherein the detecting comprises alternatively detecting a failure in a service group

including the application (see column 9 lines 5-15).

In regards to claim 13 and 30, Vert discloses:

wherein the detecting comprises detecting a failure in a service group including the

application (see column 9 lines 5-15).

In regards to claim 31, Vert discloses:

a plurality of nodes, wherein a first node of the plurality of nodes is configured to

monitor performance of an application executing on a second node of the plurality of nodes

during use and wherein the second node is included in a cluster being used to execute the

application (see column 5 lines 40-45), and

However, Vert discloses wherein the third node that is provisioned to take over the

second node is an active node of the cluster (see column 5 lines 48-52) and as such, fails to

explicitly disclose:

wherein, in response to a detection that the application is to failover from the first node, a

third node is configured to be provisioned to execute the application, wherein the third node is

added to the cluster responsive to detecting that the application is to failover from the second

node during use, and wherein the application is failed over to the third node during use.

Mashayekhi discloses a commonly known and used failover policy wherein a passive

node provides failover for all actives nodes in the cluster (see column 2 lines 60-67), indicating

in response to a detection that the application is to failover from the first node, a third node is

configured to be provisioned to execute the application, wherein the third node is added to the

cluster responsive to detecting that the application is to failover from the second node during use,

and wherein the application is failed over to the third node during use. Examiner interprets "the

cluster" described in the claims as a cluster of active node(s). Since a passive node is initially

tasked with running no applications, a passive node is not functioning as part of a cluster.

It would have been obvious to one of ordinary skill in the art at the time the invention

was made to modify the teachings of Vert with that of Mashayekhi wherein the second node is a

passive node that provides failover for all actives nodes in the cluster (see column 2 lines 60-67),

indicating in response to a detection that the application is to failover from the first node, a third

node is configured to be provisioned to execute the application, wherein the third node is added

to the cluster responsive to detecting that the application is to failover from the second node

during use, and wherein the application is failed over to the third node during use. A person of

ordinary skill in the art would have been motivated to combine the teachings of Vert and

Mashayekhi because is Vert is concerned with providing failover (see column 5 lines 48-52) and

a passive node that provides failover for all active nodes in the cluster, as per teachings of

Mashayekhi, constitutes a commonly known and used failover policy (see column 2 lines 60-67).

Furthermore, such a failover policy would be advantageous since it would not provide additional

workload to active nodes upon failure.

In regards to claim 32, Vert discloses:

activating one or more resources used by the application on the second node (see column

2 lines 35-41 and column 7 lines 35-40).

In regards to claim 33, Vert discloses:

wherein the provisioning comprises installing one or more resources used by the

application on the second node (see column 2 lines 35-41 and column 7 lines 35-40).

In regards to claim 34, Vert discloses:

wherein the second node has multiple boot capability, and wherein the provisioning

comprises rebooting the second node from a partition that comprises one or more resources used

by the application (see column 9 lines 5-11).

In regards to claim 36, Vert discloses:

wherein the first node is configured to detect that the performance of the application

executing on the second node is less than a threshold performance level. Vert discloses sending

periodic messages, called heartbeats, to detect the communication path is good and other system

are operational (see column 5 lines 30-35). In the event of a communication failure (no

heartbeat), the system fails over to one or more active systems (see column 5 lines 48-52). The

heartbeats represent the performance of the application. When heartbeats are not received, the

application performance on the first node is less than threshold performance level.

In regards to claim 37, Vert discloses:

wherein the performance is less than the threshold performance level for at least a

predetined time interval. Vert discloses sending periodic messages, called heartbeats, to detect

the communication path is good and other system are operational (see column 5 lines 30-35). In

the event of a communication failure (no heartbeat), the system fails over to one or more active

systems (see column 5 lines 48-52). The heartbeats represent the performance of the application.

When heartbeats are not received within a period of time, the application performance on the

first node is less than threshold performance level for at least a predetermined time interval.

In regards to claim 38, Vert discloses:

wherein the second node is configured to detect a failure in a service group including the

application, and wherein the application is to failover from the second node if the second node

detects the failure (see column 9 lines 5-15).

In regards to claim 39 and 40, Vert discloses:

removing the first node from the cluster responsive to successfully failing over the

application to the second node (see column 5 lines 48-49).

In regards to claim 41, Vert discloses:

wherein the second node is removed from the cluster responsive to successful failover to

the third node (see column 5 lines 48-49).

Claims 5, 6, 14, 15, 18, and 23 are rejected under 35 U.S.C. § 103(a) as being

unpatentable over Vert in view of Mashayekhi and in further view of US Patent No. 6,944,788 of

Dinker et al. referred hereinafter "Dinker".

In regards to claim 5 and 23, Vert in view of Mashayekhi fails to explicitly disclose:

selecting the second node from a plurality of nodes;

However, Dinker discloses a plurality of backup and alternate application servers or

nodes for failover, indicating selecting the second node from a plurality of nodes (see column 9

lines 10-16).

It would have been obvious to one of ordinary skill in the art at the time the invention

was made to combine the teaching of Vert, Mashayekhi, and Dinker to have a plurality of nodes

for failover, indicating selecting the second node from a plurality of nodes. A person of ordinary

skill in the art would have been motivated to combine the teachings because Vert is concerned

with providing failover (see column 2 lines 34-41) and having a plurality of nodes for failover, as

per teachings of Dinker, provides additional levels of failover (see column 9 lines 10-16).

In regards to claim 6, Mashayekhi discloses:

wherein the second node is executing a different application when selected (see column 9

lines 22-27). Mashayekhi discloses wherein the cluster is not running any application prior to

failover and running applications actively when there is a failover (see column 2 lines 65-67).

In regards to claim 14, Vert in view of Mashayekhi fails to explicitly disclose:

detecting a lack of success in the failing over.

However, Dinker discloses detecting a lack of success in the failing over. Dinker

discloses a primary application server and one or more backup application servers (see column 8

lines 30-33). Dinker further discloses when the primary becomes unavailable, a first backup is

promoted the role of the new primary (see column 8 lines 30-33). Thus, when the new primary

fails or becomes unavailable, a second backup becomes the new primary. The instance when the

first backup that becomes the new primary fails constitutes a lack of success in the failing over.

It would have been obvious to one of ordinary skill in the art at the time the invention

was made to combine the teaching of Vert, Mashayekhi, and Dinker to detect a lack of success in

the failing over. A person of ordinary skill in the art would have been motivated to combine the

teachings because Vert is concerned with providing failover (see column 2 lines 34-41) and

providing more backups, as per teachings of Dinker, provides additional levels of failover (see

column 8 lines 30-33).

In regards to claim 15, Dinker discloses:

provisioning a third node to execute the application responsive to detecting the lack of

success, and failing the application over from the second node to the third node. Dinker discloses

a primary application server and one or more backup application server (see column 8 lines 30-

33). Dinker further discloses when the primary becomes unavailable, one of the backups is

promoted the role of the new primary (see column 8 lines 30-33). When the new primary

becomes fails or becomes unavailable, another backup becomes the new primary, indicating

·provisioning a third node to execute the application responsive to detecting the lack of success,

and failing the application over from the second node to the third node

In regards to claim 18, Vert in view of Mashayekhi fails to explicitly disclose:

determining that a performance level on the second node is less than a threshold;

provisioning a third node to execute the application responsive to the determining;

failing the application over from the second node to the third node.

Dinker discloses a primary application server and one or more backup application server

(see column 8 lines 30-33). Dinker further discloses when the primary becomes unavailable, one

of the backups is promoted the role of the new primary (see column 8 lines 30-33). When the

new primary fails or becomes unavailable, another backup becomes the new primary, indicating

provisioning a third node to execute the application responsive to the determining, and failing the

application over from the second node to the third node. Dinker also discloses the fact the

primary application is unreachable may be discovered by a heartbeat mechanism (see column 11

lines 49-51). When heartbeats are not received, the application' performance level on the second

node is less than a threshold.

It would have been obvious to one of ordinary skill in the art at the time the invention

was made to combine the teaching of Vert, Mashayekhi, and Dinker to determine that a

performance level on the second node is less than a threshold, provision a third node to execute

the application responsive to the determining, and failing the application over from the second

node to the third node. A person of ordinary skill in the art would have been motivated to

combine the teachings because Vert is concerned with failover (see column 2 lines 34-41) and

providing more backups (see column 8 lines 30-33), as per teachings of Dinker, provides

additional levels of failover.

Claims 7 and 24 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Vert in

view of Mashayekhi and Dinker and in further view of Harper.

In regards to claim 7 and 24, Vert in view of Mashayekhi and Dinker fails to explicitly

disclose:

wherein the selecting comprises verifying that the second node includes hardware that is

sufficient to execute the application.

However, Harper discloses wherein the selecting comprises

.verifying that the second node includes hardware that is sufficient to execute the

application (see figure 5 and column 7 lines 60-67).

It would have been obvious to one of ordinary skill in the art at the time the invention

was made to combine the teachings of Vert, Mashayekhi, and Harper to verifying that the second

node includes hardware that is sufficient to execute the application. A person of ordinary skill in the art would have been motivated to combine the teachings because is Vert is concerned with providing failover (see column 5 lines 48-52) and verifying that the second node includes hardware that is sufficient to execute the application, as per teachings of Harper, ensures the second node is capable of providing failover (see figure 5 and column 7 lines 60-67).

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. See PTO 892.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Emerson C. Puente whose telephone number is (571) 272-3652. The examiner can normally be reached on 8-5 M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert W. Beausoliel can be reached on (571) 272-3645. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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